Family Istiophoridae

Sail Fishes

Body greatly compressed, elongate, tapering gradually from head. Head with upper jaw extended into sword or spear like beak, which rounded along each side and sometimes at most only moderately depressed. Eye small, advanced or over maxillary. Jaws with very small, persistent granular teeth. Gill reticulated, no gill rakers. Air bladder very large, sacculate, with many separated sections. Intestine short, straight. Vertebrae 24, of which 12 caudal; neural and haemal spines flag like. Ribs well developed. Scales elongate, adherent, narrow, little free.

dorsal with front or spinous section elevated, fin very high and entire or low and divided with age; first dorsal much longer than second and its rays spinous. Anal divided. Last ray of dorsal and anal suctorial. Base of caudal with 2 low horizontal keels each side. Pectoral falcate, slender. Ventrals with 1 to 3 rays, joined to pelvic arch.

Fishes of great size of the tropical seas, some reaching upward of 1500 or 2000 pounds, among the largest of all bony fishes. Most are highly valued for their rich, firm flesh.

Analysis of Genera

a.¹ Istiophorinae. Dorsal fin very greatly elevated, ventral fins very long, rays not entirely united. Istiophorus.

a.² Tetrapturinae. Dorsal fin not greatly elevated, always with lobe in front, at least rays following; ventrals ~~more~~ with rays more or less fused as one.

b.¹ Front dorsal lobe but little higher than median part of fin. Tetrapturus.

b.² Front dorsal lobe usually prominent and contrasted in height with rest of fin. Makaira.

Montalban, Philippine Journ. Sci., vol. 36, no. 1, May 1928, p. 117 (compiled). 1/27

Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 229 (compiled). — ~~Sci. Rpts. T.H.R., vol. 1, 1930, p. 56, pl. 2, fig. 1 (Yaeyama, Riu Kiu).~~ J. Schmidt, Trans. Pac. Comm. Acad. Sci.

Pseudupeneus spilurus Evermann and Seale, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 88 (Bonin). 1/27 Snyder, Proc. U.S. Nat. Mus., vol. 32, 1907, p. 91 (Wakanoura and Nagasaki).

? Pseudupeneus jeffi Ogilby, Proc. Roy. Soc. Queensland, vol. 21, 1908, pp. 3, 12. Brisbane River, Queensland.

Genus Istiophorus Lacépède

Istiophorus Lacépède, Hist. Nat. Poiss., vol. 3, p. 374, 1802. (Type Istiophorus gladifer Lacépède, monotypic.)

†Histiophorus Cuvier, Hist. Nat. Poiss., vol. 8, p. 293, 1831. (Type Istiophorus gladifer Lacépède, monotypic.)

Xiphias Linnaeus, Syst. Nat., ed. 10, vol. 1, p. 248, 1758. (Type Xiphias gladius Linnaeus, monotypic.)

Xiphiorhynchus Gill, Proc. Acad. Nat. Sci. Phila., p. 131, 1862. (Type Xiphias platypterus Shaw.)

Tetrapturus Rafinesque, Ann. Nat., p. 5, 1810. (Type Tetrapturus belone Rafinesque, monotypic.)

Makaira Lacépède, Hist. Nat. Poiss., vol. 3, p. 374, 1802. (Type Makaira nigricans Lacépède, monotypic.)

Nothistium Hermann, Observ. Zool., p. 304, 1804. (Type Guebucu brasiliensibus Marcgrave, = Histiophorus americanus Cuvier.)

†Skeponopodus Hardo, Isis, vol. 26, col. 416, 419, 1833. (Type †Skeponopodus typus Hardo.)

Xanclurus Swainson, Nat. Hist. Animals, vol. 2, p. 239, 1839. (Type Xanclurus indicus Swainson, monotypic.)

Body slender, greatly compressed, tapering gradually to rather slender caudal peduncle. Head rather small, long, compressed. Teeth very fine, minute, numerous, in jaws and on palatines. Young or postlarval forms with long spine at preopercle angle, disappearing with age. Intestine short, nearly straight. Air bladder sacculate. Sword with rough lateral edges. Scales elongate, little distinct. First dorsal greatly elevated, higher than body, spines slender and very numerous. Anal divided. Pectoral falcate. Ventral with 2 or 3 separated rays.

The sail fish, so called from their high front dorsal suggestive

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Depth $3^2/_3$; head $3^2/_3$, width 2. Snout $4^3/_4$ in head from snout tip; eye 3 ($3^3/_8$ on figure), greater than snout, equals interorbital; maxillary reaches opposite hind eye edge, expansion at last $^3/_4$ of eye, length 2 in head; lower jaw slightly longer; teeth villiform, outer row above little enlarged, likewise inner lower row; interorbital low; preorbital depth much less than eye; preopercle edge denticulate.

Scales 60 ? in lateral line to caudal base; 6 above (figure shows 7 rows above anal origin); caudal base with fine scales, soft dorsal and anal with low basal scaly sheaths, fins otherwise naked.

D. X, I, 28 or 29, second spine 2 in total head length, first ray $2^7/_8$; A. II, 7 or 8, second spine robust, $2^2/_5$ in head or $1^1/_3$ in postocular; caudal $1^1/_5$, cuneate; least depth of caudal peduncle $3^3/_4$; pectoral $1^2/_5$; ventral $1^1/_2$.

Above bluish or greenish gray, sides and below silvery. Iris yellowish. Fins yellowish. Length 72 to 90 mm. (Bleeker.)

Siam, East Indies, Indo China. Bleeker had but two small examples.

Johnius ophiceps (Alcock) — p. 129

Sciaena ophiceps ALCOCK, Journ. Asiat. Soc. Bengal, vol. 58, pt. 2, 1889, p. 300, (Off Mahanaddi delta in 5 to 9 fathoms and off Godavari delta in 4 or 5 fathoms; vol. 65, pt. 2, 1896, p. 315 (Orissa coast).

when elevated, of the tail of a boat. Circumtropical fishes of large size. I have provisionally accepted but two species in this genus, chiefly with respect to their distribution, as one Atlantic and the other Indo-Pacific.

Analysis of Species

a. Pectoral usually shorter or reaches less than half way to first anal. americanus.

a.' Pectoral usually longer, at least with age, or reaches more than half way to first anal. gladius.

8 pt. Leaded

Pseudosciaena japonica JORDAN and SNYDER, Annot. Zool. Japon., vol. 3, 1901, p. 81 (Yokohama; Nagasaki).

Sciaena mi-iuy BASILEWSKY, Nouv. Mém. Soc. Nat. Moscou, vol. 10, 1855, p. 22. (Mari meridiano; Peking.

Sciaena bleekeri (not Pseudotolithus bleekeri STEINDACHNER 1866) DAY, Fishes of India, pt. 2, 1876, p. 185, pl. 45, fig. 4. (Bombay and Gwadur; Fauna Brit. India, Fishes, vol. 2, 1889, p. 112. - LLOYD, Rec. Indian Mus., vol. 1, 1907, p. 225 (Akyab). - PEARSON, Ceylon Administr. Rep., 1914, p. E7; 1915-1918, p. F13.

Sciaena (Pseudosciaena) bleekeri STEINDACHNER and DÖDERLEIN, Denkschr. Akad. Wiss. Wien, Math.-nat. Kl., vol. 48, pt. 1, 1884, p. 33 (Japan).

Pseudosciaena schlegeli BLEEKER, Verh. Kon. Akad. Wet. Amsterdam, vol. 18, 1879, p. 9. (Nagasaki.

Sciaena (Pseudosciaena) schlegeli STEINDACHNER and DÖDERLEIN, Denkschr. Akad. Wiss. Wien, Math.-nat. Kl., vol. 48, pt. 1, 1884, p. 33 (Tokyo). - JORDAN and THOMPSON, Proc. U.S. Nat. Mus., vol. 39, 1911, p. 254 (Tokyo, Onomichi, Tsuruga, Aomori, Aoetsu, Hiroshima, Kawatana, Nagasaki).

Sciaena (Pseudosciaena) schlegelii STEINDACHNER, Ann. Hofmus. Wien, vol. 11, 1896, p. 208 (Japan).

Corvula schlegeli JORDAN and SNYDER, Annot. Zool. Japon., vol. 3, 1901, p. 81 (Yokohama; Nagasaki); Proc. U.S. Nat. Mus., vol. 23, 1901, p. 356 (Tokyo). - FRANZ, Abh. Bayer. Akad. Wiss., Math.-phys. Kl., vol. 4, Suppl. vol. 1, 1910, p. 45, pl. 6, fig. 50 (Yokohama; Dzushi).

Sciaena schlegeli SNYDER, Proc. U.S. Nat. Mus., vol. 42, 1912, p. 416 (Kagoshima). - JORDAN and METZ, Mem. Carnegie Mus., vol. 6, No. 1, 1913, p. 37 (Fusan, Korea). - JORDAN and THOMPSON, Mem. Carnegie Mus., vol. 6, No. 4, 1914, p. 258 (Matsushima Bay; Osaka).

Istiophorus americanus Cuvier Valenciennes

Histiophorus americanus Cuvier Valenciennes, Hist. Nat. Poiss., vol. 8, (1831) p. 303, (on Gnebuca brasiensibus Marcgrave, Hist. Brasil., 1648, p. —, type locality, Brazil).

Istiophorus americanus Jordan and Evermann, Occas. Pap. California Acad. Sci., vol. 12, (September 30, 1926) p. 39, pl. 10, fig. 2, (compiled).

Histiophorus pulchellus Cuvier, Hist. Nat. Poiss., vol. 8, p. 305, pl. 230, 1831 (type locality, East Atlantic north of Cape of Good Hope). — Günther, Cat. Fish. Brit. Mus., vol. 2, p. 514, 1860 (copied). — Lütken, Vidensk. Med. Nat. Foren. Kjöbenhavn, p. 1, 1875. — Goode, Rep. U. S. Fish Comm., pt. 8, p. 310, 1880 (1883) (compiled).

Rhefanopodus quebucu Hardo, Risi, vol. 26, col. 416, 419, 1833 (on Guebucu brasiliensibus Marcgrave).

Histiophorus gladius (not Brousonet) Günther, Cat. Fish. Brit. Mus., vol. 2, p. 513, 1860 (part).

Istiophorus nigricans (not Lacépède) Jordan and Evermann, Bull. U. S. Nat. Mus., no. 47, pt. 1, p. 891, 1896 (Florida).

Istiophorus greyi (Jordan and Evermann), Occas. Pap. California Acad. Sci., vol. 12, (September 30, 1926, p. 41, pl. 14,) (type locality, near Cape San Lucas, Lower California) (photograph).

Istiophorus wrighti (Jordan and Evermann), Occas. Pap. California Acad. Sci., vol. 12, (September 30, 1926, p. 43, pl. 12, fig. 2,) (type locality, near Miami, Florida) (photograph [the rigid dorsal evidently an artificial fin!].

Istiophorus maguirei (Jordan and Evermann), Occas. Pap. California Acad. Sci., vol. 12, September 30, 1926 (p. 45, pl. 13, type locality, Off Long Key, Florida) (photograph).

Ophiophorus volador Jordan and Evermann, Occas. Pap. California Acad. Sci., vol. 12, September 30, 1926 p. 46, pl. 12, fig. 1 (type locality, Long Key, Florida) (photograph).

Depth 6 to 9 3/4; head 2 2/5 to 2 3/4, snout from end of beak 1 2/5 to 1 3/5 in head; eye 2 1/2 to 3 2/3 in postocular space; interorbital 1 3/5 to 2 3/5; lower jaw 1 3/5 to 1 3/4 in rest of head; maxillary reaches opposite hind eye edge or little beyond.

Scales thin, loose, lanceolate along dorsal edge; row of about 12 across cheek. Lateral line highly arched in front, curves down opposite depressed pectoral tip, continuous to caudal base.

D. XII,1 or XII,II, 6 or 7, inserted about midway in postocular space, long spines rather flexible, at least first terminally, second fin small and far back; A. IX to XIV, 7 or 8, first fin inserted little nearer caudal base than ventral origin,

second fin lower and opposite similar second dorsal; caudal 4 to 4 1/5 in rest of fish, widely forked; pectoral 2 1/3 to 2 1/2 in head, reaches 2 1/4 to 2 2/5 to first anal; ventral reaches 1 1/5 to 1 1/4.

Blue black above, sides and below silvery white. When fresh sides usually with 16 to 18 pale gray or whitish, narrow, transverse bars, each of which may be formed of several pale spots, indistinct or pale towards belly. Iris whitish. Dorsals and ventrals neutral, black, first dorsal with deeper colored or black spots, small, usually numerous but variable, from less than 20 to 40 or more on each membrane. Anals, caudal and pectoral grayish.

Tropical and subtropical Atlantic. I have examine many examples, both fresh and preserved,

the former in markets, about fisheries and fishing clubs and the latter in many private collections as anglers trophies. These were from the Grand Banks, off New York, New Jersey, Florida, Bahamas and Cuba.

A. N. V. P., one example. Sea Isle City, N. J. August 24, 1906. W. J. Fox. Length 6 10 mm.

Histiophorus gladius (Broussonet)

Scomber gladius Broussonet, Mem. Acad. Sci., Paris, ~~1787~~ (1788) p. 450, pl. 10, ("La mer des Indes") (type locality). — Bloch, Naturges. Ausland. Fische, vol. 7, p. 81, pl. 345, 1793 (East Indies; Surate, Madagascar; Mauritius [not Antilles and Brazil]).

Histiophorus gladius (Günther), Cat. Fish. Brit. Mus., vol. 2, (1860) p. 513, (type; Cape of Good Hope; New South Wales?). — Goode, Rep. U. S. Fish Comm., vol. 8, 1880 (1883), (p. 309) (reference). — Elera, Cat. Fauna Filipinas, vol. 1, 1895 (p. 518) (Luzon, Manila, Batanes). — Barnard, Ann. South Afric. Mus., vol. 21, pt. 2, p. 807, (Cape Seas; St. Sebastian Bay) Oct. 1927

Sauvage, Hist. Nat. Madagascar, Poiss., p. 519, 1891 (reference).

Distiophorus gladius Jordan and Jordan, Mem. Carnegie Mus., vol. 10, no. 1, December 1922, p. 30, fig. 2, (Honolulu; Thompson's cast afterwards renamed Distiophorus strigosus!). — Jordan and Evermann, Occas. Pap. California Acad. Sci., vol. 12, (September 30, 1926) p. 38, (compiled).

McCulloch, Rec. Austral. Mus., vol. 13, no. 4, p. 137, pl. 24, fig. 1, April 12, 1921 (Port Stevens, New South Wales).

— McCulloch, Austral. Mus. Mem., no. 5, pt. 2, p. 266, September 10, 1929 (reference). — Deraniyagala, Ceylon Journ. Sci., vol. 18, pt. 1, p. 54, pl. 2, Dec. 22, 1933 (Negombo, Colombo, Väligama, Gandera, Ceylon; Malé, Maldives).

Xiphias velifer Schneider, Syst. Ichth., (1801) p. 93, (on Scomber gladius Broussonet).

Xiphias platypterus Shaw, Gen. Zool., vol. 4, (1802) p. 101, Shaw and Nodder, Naturalists Miscellany, vol. 3, pl. 88, -1792 (type locality; Brazil; East Indies; Northern Ocean).—

Histiophorus gladifer Lacépède, Hist. Nat. Poiss., vol. 3, (1808) p. 374, (on Scomber gladius Broussonet; Madagascar; Mauritius; Surate).

Histiophorus indicus Cuvier Valenciennes, Hist. Nat. Poiss., vol. 8, (1831) p. 293, pl. 229, (on Scomber gladius Broussonet); Règne Animal, Ed. Ill., Cuvier, (1839) pl. 53, fig. 1,

Zanclurus indicus Swainson, Nat. Hist. Animals, vol. 2, p. 240, 1839 (on Cuvier).

Histiophorus immaculatus Rüppell, Proc. Zool. Soc. London, vol. 3, (1835), p. 187 (type locality, Red Sea (specimen 18 inches long); Trans. Zool. Soc. London, vol. 2, 18 , p. 71, pl. 15 (type); Neue Wirbelth. Fische, (1835) p. 42, pl. 11, fig. 3 (djedda). — Günther, Cat. Fish. Brit. Mus., vol. 2, (1860) p. 514, (copied). — Lütken, Vidensk. Med. Naturh. Foren. Kjöbenhavn, (1875.2) p. 1. — Day, Fishes of India, pt. 2, (1876) p. 199, — Goode, Rep. U.S. Fish Comm., vol. 8, 1880 (1883), p. 309 (copied).

Histiophorus orientalis Schlegel, Fauna Japonica, Poiss., p. 5-6, (1844) f. 103, pl. 55, (type locality, southeast coast of Japan). — Bleeker, Verh. Batavia. Genoot. (Nat. Hist. Japan), vol. 25, (1853), p. 148 (reference). — Günther, Cat. Fish. Brit. Mus., vol. 2, (1860) p. 14? (copied). — Lütken, Videnskab. Med. Naturh. Foren. Kjöbenhavn, vol. , (1875) (f. 1, pl. 1) (Singapore). — Goode, Rep. U. S. Fish Comm., pt. 2, (1880 (1883)), p. 302 (copied). — Jordan and Hubbs, Mem. Carnegie Mus., vol. 10, no. 2, p. 222, June 27, 1925 (Kobe; Yamada Museum).

— Martens, Preuss. Exped. Ost Asien, vol. 1, p. 391, 1876 (Nagasaki Bay).

Istiophorus orientalis Jordan and Snyder, Annot. Zool. Japon., vol. 3, (1901) p. 65, (reference). — Fowler, Descr. Cat. Bishop Mus., vol. 8, No. 7, (1923) p. 378, (Honolulu). — Jordan and Evermann, Descr. Cat. California Acad. Sci., vol. 12, (September 30, 1926) p. 46, pl. 15, fig. 1 ~~fig. 1~~ (Kobe, Japan). — Fowler, Mem. Bishop Mus., vol. 10, (1928) p. 136, (Honolulu; cast type of Istiophorus erigmius).

&; Ann. Natal Mus., vol. 6, pt. 2, p. 257, text fig. 3, May 1929 (Zululand coast in 25 fathoms).

— Anonymous, Illustrat. Jap. Aquat. Plants and Animals, vol. 1, pl. 26, fig. 4, 1931.

Histiophorus granulifer Castelnau, Mem. Poiss. Afrique Austral., (1861), p. 42, ♂ (type locality, Cape of Good Hope; on mutilated skeleton).

Histiophorus dubius Bleeker, Ned. Tijds. dierk., vol. 4, (1873) p. 151, ♂ (type locality, China).

Histiophorus triactes Hemprich and Ehrenberg, Symbol. Physicae, (1899) pl. 10, ♂ (type locality, Red Sea).

Istiophorus japonicus Jordan and Thompson, Mem. Carnegie Inst., vol. 6, no. 4, p. 240, fig. 1914 (Kobe) (credited to "Cuvier and Valenciennes" but not in their work, evidently lapsus of memory).

Istiophorus orientalis (Jordan and Ball) Jordan and Evermann, Descr. Cat. California Acad. Sci., vol. 12, (September 30, 1926) p. 48, pl. 15, fig. 2, ♂ (type locality, Honolulu market) (on cast of Fowler's specimen).

Case 130

Genus Diapterus Ranzani

Diapterus Ranzani, Nov. Com. Bononensis, Vol. 5, 1841, p. 340. Type Diapterus auratus Ranzani, monotypic.

Body compressed, elevated and more or less rhomboid. Head large, compressed. Snout short. Eye moderate. Preopercle edge serrate. Gill rakers short, weak, about 12 below on first arch. Scales moderate, about 40 in lateral line, 5 above and 9 below. Scales in about 6 rows on cheek. Dorsal with 9 spines and 10 rays, in continuous, last spines lower than soft rays following. Anal with 3 spines and 8 rays.

This genus largely of the Atlantic and the following species.

Stiophorus brooksi Fowler, Proc. Acad. Nat. Sci. Philadelphia, vol. 84, p. 403, pl. 29, 1933 (type locality, Papeete, Tahiti); Mem. Bishop Mus., vol. 11, no. 7, p. 400, 1934 ~~(copied)~~. (type; Papeete; fig. 1, a-c, Cocos Island).

Stiophorus ludibundus Whitley, Rec. Austral. Mus., vol. 19, no. 1, p. 83, August 2, 1933 (type locality, Port Stephens, New South Wales).

Depth 9 2/3; head 2 4/5, width 8 1/5. Snout 1 2/5 in head from snout tip; eye 18 1/4, 13 2/5 in snout, 4 1/5 in postocular, 2 1/8 in interorbital; mandible extends on snout as measured from front of eye 2 1/4; maxillary reaches 8 1/8 eye diameter beyond eye; infraorbital depth 8 maxillary groove 4 in eye; maxillary expansion 4; interorbital 10 2/3 in head; mandible 2 1/2. Gill filaments equal 1 1/3 eye diameters.

Scales elongate, lanceolate, rather small, in irregular series. Lateral line axial, distinct, with about 174 scales along and close above its course.

8 pt. Leaded
Follow—Incl Caps

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677

12 ems] m¹. Paired fins pale.

13 ems] n¹. Lower gill rakers 12 or 13.

14 ems] o¹. Caudal peduncle moderately deep.

14 ems] o¹. Spinous dorsal black base white and black blotch at base of each dorsal ray — c2 — albiflora.

15 ems] p¹. Spinous dorsal gray

16 ems] . Eye 4 to $4^2/_3$ — c2 — australis.

16 ems] . Eye $4^7/_8$ to $5^1/_4$ — c2 — goldmanni.

15 ems] p². Caudal peduncle slender; eye 9; dorsal membranes deeper brownish terminally — c2 — polykladiskos.

13 ems] n². Lower gill rakers 14 to 18 (rarely low as 9 in sina).

D. 46, fin height equals head or $2\frac{4}{5}$ in head to caudal base; second dorsal 7, first ray $1\frac{1}{4}$ in last ray which $2\frac{1}{8}$ in postocular; A. III, 9, first branched ray $1\frac{1}{8}$; second anal with 7 rays, first ray (broken) subequal with last or $2\frac{1}{4}$ in postocular; pectoral $4\frac{1}{4}$ in head, rays I, 19; ventral reaches $\frac{5}{6}$ to anal or $1\frac{1}{3}$ in total head length, apparently of 3 rays, of which last very short, first also short and broad and median very broad or compressed, greatly prolonged, caudal $4\frac{7}{8}$ in rest of fish, widely forked.

Back and upper surface of head gray brown. Under surfaces of head and body

8 pt. Loaded

13478 678

1 Item] r¹. Drab gray above, below white; second anal spine weak — — — sina.

1 Item] r². Dark streaks follow oblique scale rows above lateral line, horizontal rows below; second anal spine strong — — — cujus.

12 ems] m². Caudal, anal and paired fins blackish bro — — — — — bleekeri.

8 ems] i². Depth 3 1/2 to 4.

18 ems] o². No dark maxillary blotch.

19 ems] t¹. Lower gill rakers 13 — — soldado.

t¹. Lower gill rakers 14 or 15 — argentatus.

s². Dark axillary blotch, spinous dorsal black terminally — axillaris.

silvery white. Iris gray white. Beak brown. Dorsal fin blackish, second fin more brown. Caudal brown. First anal gray black, second fin whitish. Pectoral brownish gray terminally, paler basally. Ventral blackish.

Red Sea, Zululand, South Africa, Madagascar, Mauritius, India, Malaya, East Indies, Philippines, China, Japan, New South Wales, Polynesia, Hawaii. According to Barnard reaches 12½ feet.

A 1247. Amboin market, Dutch East Indies. December 6, 1909. Length 1190 mm.

8 pt. Leaded

Follow—Incl Caps

655

134789

679

b3. Dorsal rays 30 to 33; opercle with dark blotch.

a2. Tubular scales 55 to 60 in lateral line.

20 ems — u1. Dorsal dusted gray — — hypostomus

20 ems — u2. Dorsal nearly black — — dussumieri

21 ems — v1. Dorsal rays 22 to 25 — — subatus

21 ems — v2. Dorsal rays 26 to 31

22 ems — w1. Black axillary blotch; fins gray or pale — — hololepidota

22 ems — w2. No black axillary blotch.

23 ems — x1. Fins yellow or orange.

655

I have a photograph of an example of 130 pounds weight - obtained in March 1932 and kindly sent by Mr. Hugh Copley.

Genus Tetrapturus Rafinesque

Tetrapturus Rafinesque, Ind. It. Sicil., (1810) p. 36. (Type Tetrapturus belone Rafinesque, monotypic.)

Tetrapterus Swainson, Nat. Hist. Animals, vol. 2, p. 239, 1839. (Type Tetrapturus belone Rafinesque.)

Tetrapterurus Jordan and Evermann, Occas. Pap. California Acad. Sci., vol. 12, September 30, 1926, p. 29, (Type Tetrapturus belone Rafinesque.) (Corrected orthography.)

First dorsal not greatly elevated, front lobe little distinct or elevated, or little if any higher than middle of fin. Ventrals moderate, rays united at single ray.

differs from Makaira chiefly in its dorsal fin, in which all the rays are longer and the front lobe only slightly contrasted in height. Probably a single species.

1005a

p. 28 (Ponape). 1/1 Beaufort, Bijd. Dierk. Amsterdam, vol. 19, 1913, p. 121 (Amboin).

Diapterus macracanthus Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1873-77, p. 125, pl. (78) 362, fig. 1 (Arias, Bamba, Java).

Xiparus edentulus Günther, Cat. Fishes Brit. Mus., vol. 1, 1859, p. 346 (name in text). No locality.

Tetrapturus imperator (Schneider)

Xiphias imperator Schneider, Syst. Ichth. Bloch, (1801) p. 93, pl. 21 (type locality, Mediterranean (on Duhamel and Lamarre), Fr. Gen. Perch., ~~176~~ vol. 4, p. 2, no. 3, sect. 5, (1769–82) p. 333, pl. 25, fig. 2).

Tetrapturus imperator Jordan and Evermann, Bull. U. S. Nat. Mus., no. 47, pt. 1, (1896) p. ; Goode, Rep. U. S. Fish. Comm., vol. pt. 8, p. 306, pl. 2 (copied Cuvier), 1880 (1883) (note).

Follow—Incl Caps
8 pt. Leaded

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Sciaena (Corvina) miles KLUNZINGER, Sitz. Ber. Akad. Wiss. Wien, Math.-nat Kl., vol. 80, pt. 1, 1879, p. 372 (Queensland).

Johnius miles BLEEKER, Versl. Akad. Wet. Amsterdam, vol. 12, 1861, p. 73 (Pinang). - FOWLER, Journ. Bombay Nat. Hist. Soc., vol. 30, No. 2, June 25, 1925, p. 260 (Bombay); vol. 32, No. 2, Oct. 20, 1927, p. 260 (Bombay).

Pseudosciaena miles BLEEKER, Verh. Kon. Akad. Wet. Amsterdam, ser. 3, vol. 14, 1874, p. 25 (Pinang, Banka, Java, Borneo, Celebes); Atlas Ichth. Ind. Neerland., vol. 9, 1877, pl. (2)385, fig. 3.

Sciaena argentea (not FORSKÅL, 1775) (KUHL and VAN HASSELT) CUVIER, Hist. Nat. Poiss., vol. 5, 1830, p. 71, (Java. (Name in text.)

Corvina argentea MACLEAY, Proc. Linn. Soc. New South Wales, vol. 8, 1883, p. 204 (Lake Burdekin River, Queensland).

Corvina wolffii BLEEKER, Nat. Tijds. Nederland. Indië, vol. 2, 1851, p. 66, (Bandjermassing, in rivers).

Corvina sampitensis BLEEKER, Nat. Tijds. Nederland. Indië, vol. 3, 1852, p. 421, (Sampit, South Borneo).

Corvina celebica BLEEKER, Nat. Tijds. Nederland. Indië, vol. 7, 1854, p. 244. (Macassar, Celebes).

Corvina dorsalis PETERS, Arch. Naturg., vol. 21, pt. 1, 1855, p. 242, (Quilimane, Mozambique). - SAUVAGE, Hist. Nat. Madagascar, 1891, p. 350, pl. 17, fig. 3-3a, 1891.

Sciaena mülleri STEINDACHNER, Denkschr. Akad. Wiss. Wien, Math.-nat. Kl., vol. 41, Pt. 1, 1879, p. 1, (Cleveland Bay at Townsville, Queensland).

Sciaena (Corvina) mülleri KLUNZINGER, Sitz. Ber. Akad. Wiss. Wien, Math.-nat. Kl., vol. 80, pt. 1, 1879, p. 372 (Queensland).

Tetrapturus belone Rafinesque, Carnat. Nuov. Anim. Sicilia, ~~1810~~, p. 54, pl. 1, fig. 1, 1810 (type locality, Sicily). — ~~Valenciennes~~ Cuvier, Hist. Nat. Poiss., vol. 8, ~~1831~~, p. 280, pls. 227, 228, 1831 (Messina). — Jordan and Evermann, Occas. Pap. California Acad. Sci., vol. 12, September 30, 1926, p. 30 (compiled).

Histiophorus belone Günther, Cat. Fish. Brit. Mus., vol. 2, 1860, p. 313 (reference).

Histiophorus ancipitirostris ~~Valenciennes~~ Cuvier, Hist. Nat. Poiss., vol. 8, 1831, p. 309 (no type locality). — Günther, Cat. Fish. Brit. Mus., vol. 2, 1860, p. 512 (reference). — Goode, Rep. U. S. Fish Comm., vol. 8, 1880 (1883), p. 310 (compiled).

ninth ray 3 to 3 1/3, first ray 2 2/5 to 2 2/3; A. III, 7, I, third spine 2 1/4 to 2 1/2, first ray 2 2/5 to 2 1/2; caudal 1, forhead; least depth of caudal peduncle 2 2/3 to 2 3/4; ventral 1 1/4 to 1 1/2?; pectoral 2 2/5 to 2 4/5 in combined head and body to caudal base.

Back pale brown, with 10 to 12 pale dusky vertical lines, often broken as series of dark blotches. Sides, lower surface and iris bright silvery white. Snout edge and upper lip dusky. Spinous dorsal blackish on membranes terminally. Row of dark spots on soft dorsal, one on each membrane below middle and concealed by basal scaly sheaths.

Red Sea, Arabia, Portuguese East Africa, Natal, Mauritius, Madagascar, India, Ceylon, Pinang, East Indies, Philippines,

Tetrapturus georgii Lowe, Proc. Zool. Soc. London, vol. 8, (1840), p. 36, (type locality, Madeira); Trans. Zool. Soc. London, vol. 3, (1839), p. 3, (Madeira). — Goode, Rep. U. S. Fish Comm., pt. 8, p. 308, 1880 (1883) (note).

Makaira georgii Jordan and Evermann, Occas. Pap. California Acad. Sci., vol. 12, September 30, 1926, p. 55 (compiled).

Depth 2 1/6 to 2 1/2, head 3 to 3 1/8, width 1 7/8 to 2. Snout 3 to 3 2/5 in head; eye 3 to 3 2/5, equals snout, 1 to 1 1/4 in interorbital; maxillary reaches 1/4 to 1/4 in eye, expansion 1/3 in eye, length 2 3/4 to 3 in head; interorbital 2 1/2 to 3 1/4, broadly convex. Gill rakers 4 to 6 + 7, lanceolate, 1/3 of gill filaments which 2 2/5 in eye.

Scales 40 to 44 in lateral line to caudal base and 3 to 5 more on latter; 5 or 6 above, 9 or 10 below, 13 to 22 predorsal forward opposite front eye edge with broad premaxillary groove scaleless; 3 rows on cheeks to preopercle ridge. Scales with 6 to 10 basal radiating striae; circuli extremely fine.

D. IX, 10, I, second spine filamentous and often reaching base of last soft ray, third spine 1 2/5 to 1 5/5 in head,

Histiophorus brevirostris Playfair, Fishes of Zanzibar, (1866) p. 53, p. 145, 2 figs.; type locality, Zanzibar. — Day, Fishes of India, pt. 2, ~~1878~~, p. 199, pl. 17, fig. 3, 1876. — Sauvage, Hist. Nat. Madagascar, Poiss., p. 519, 1891 (reference).

Tetrapturus brevirostris Lütken, Vid. Selsk. Skrift. Kjöbenhavn, vol. 5, pt. 12, (1880) pp. 441, 592. — Goode Rep. U. S. Fish Comm., ~~vol.~~ pt. 8, (1880 (1884)) p. 308, (copied). — Jordan and Evermann, Occas. Pap. California Acad. Sci., vol. 12, September 30, 1926, p. 33 (compiled). — Fowler, Mem. Bishop Mus., vol. 10, (1928) p. 136, (compiled).

— Deraniyagala, Ceylon Journ. Sci., vol. 18, pt. 1, p. 53, Dec. 22, 1933 (Ceylon).

Dstijompax Whitley, Fishes New South Wales, McCulloch, Additions, No. 3950, 1934. (Type Dstiophorus ludibundus Whitley, monotypic.)

Tetrapturus angustirostris Tanaka, Fig. Descript. Fishes of Japan, vol. 18, 1914, pl. 88, fig. 285; vol. 19, 1915, p. 324 (type locality, Sagami Sea, Japan). — Jordan and Evermann, Occas. Pap. California Acad. Sci., vol. 12, September 30, 1926, p. 31 (compiled).

Tetrapturus illingworthi Jordan and Evermann, Occas. Pap. California Acad. Sci., vol. 12, September 30, 1926, p. 32, pl. 8 (type locality, Honolulu market) (dorsal fin and photograph). — Fowler, Mem. Bishop Mus., vol. 11, No. 6, p. 400, 1934 (reference).

Xystaema macracantha Fowler, Copeia, No. 58, June 18, 1918, p. 4 (Philippines).

Gerres philippinus Günther, Cat. Fishes Brit. Mus., vol. 4, 1862, p. 258. Philippines; Ann. Mag. Nat. Hist. London, series 3, vol. 20, 1867, p. 66 (Philippines, Cape York). 1 Nicol Bay. 1 Elera, Cat. Fauna Filipin., vol. 1, 1895, p. 560 (Philippines).

Diapterus philippinus Bleeker, Verslagen Akad. Wetensch. Amsterdam, series 2, vol. 7, 1873, p. 242 (compiled).

Gerres cheverti Ogilby and Macleay, Proc. Linn. Soc. New South Wales, vol. 1, 1876 (February 1877), p. 272, pl. 7, fig. 1. Cape Grenville.

Gerres ovalentus Ogilby, Proc. Linn. Soc. New South Wales, vol. 9, pt. 2, August 9, 1884, p. 200. Cardwell.

Tetrapturus kraussi Jordan and Evermann, Occas. Pap. California Acad. Sci., vol. 18, September 30, 1926, p. 33, pl. 9 (type locality, Honolulu market) (photograph).

Tetrapturus ectenes Jordan and Evermann, Occas. Pap. California Acad. Sci., vol. 12, September 30, 1926, p. 34, pl. 11, fig. 2 (type locality, Honolulu market) (photograph).

— Fowler, Mem. Bishop Mus., vol. 11, no. 6, p. 400, 1934 (reference).

57974 U.S.N.M. Zamboanga. Dr. E. A. Mearns. Length 119 to 136 mm. 20 examples. As Xystaema punctatum.

57967 U.S.N.M. Zamboanga. Dr. E. A. Mearns. Length 27 to 62 mm. 7 examples. As Xystaema ocyena. Though several of the small ones are a little more elongate, and all are without the elongated second dorsal spine, I think they belong with the present species.

72684 U.S.N.M. Batavia, Java. Bryant and Palmer. April 2, 1909. Length 113 mm.

76619. U.S.N.M. Formosa. Dr. F. Baker. Length 108 mm.

depth 7; head 3 to 3 3/5.
Snout 1 1/2 to 1 2/3 in head; eye
3 2/5 to 3 3/4 in postocular;
mandible tip to front eye edge
1 2/5 to 2 1/4 in snout; maxillary
extends 3/5 to 2/3 an eye diameter
beyond eye.

Lateral line little arched
over pectoral, then straight and
axial to caudal base.

D. XXXV to ~~XXIV~~ I 6, first
fin origin midway to last third
in postocular space, height of
front lobe 2 1/2 to 2 4/5 in head
or 1 1/2 to 1 ~~2/3~~ in space between
mandible tip and hind edge of
gill opening; A. II, 9 to 13 — 7,
first fin height 3 2/5 to 4 1/2 in
head, second fin length 4;
caudal 1 1/2 to 1 3/4, widely
forked; least depth of caudal

Body rather slender, elongate, well compressed. Sword usually covered with very minute asperities, rounded on edges and spear like. Air bladder very large, saccate, with very numerous divisions. Body covered with subtriform, scale like scutes, under epidermis.

peduncle 8 2/3 to 9; pectoral 2 1/2 to 2 3/4 or 1 1/10 to 2 1/4 in. space between mandible top and hind edge of gill opening; ventral 1 3/4 to 2 1/8 in head.

Usually dark blue black, pale to grey or whitish below. With or without 15 to 20 pale gray transverse narrow bars on back and sides. Fins more or less dark gray, dorsals clouded or not with blackish.

Zanzibar, India, Japan, Hawaii. Also in the eastern Atlantic and Mediterranean. Reaches 10 feet in length. The above account from Cuvier, Playfair, Jordan and Evermann.

Genus Makaira Lacépède

Marlins

Makaira Lacépède, Hist. Nat. Poiss., vol. 4, (1803) p. 688, (Type Makaira nigricans Lacépède, monotypic.)

Machaera Swainson, Nat. Hist. Animals, vol. 2, p. 240, 1839. (Type Machaera niger Swainson = Makaira nigricans Lacépède, monotypic.)

Macaira

Zane
Marlina Gray, Natural History, New York, vol. 18, No. 1, p. 47, 1928. (Type "New Zealand form of Makaira mitsukurii" = ~~Makaira~~ Tetrapturus indicus Cuvier.)

Istiompax Whitley, Australian Zoologist, vol. 6, p. 321, 1931. (Type Istiompax australis Whitley, - orthotypic.)

Body well compressed. Eye advanced, small. Sword with rounded edges, seldom very rough with denticles or prickles, moderate or long in length. Air bladder ~~a~~ccculate. Intestine short, nearly straight, with few foldings. Pyloric coeca very numerous. Vertebral 24, of which 12 caudal. Scales lanceolate, imbedded, little free. Dorsal fins separated, with age, most of middle rays short and but little elevated. Anals divided. Pectoral falcate, slender, moderate or long. Ventral reduced to single, simple ray or spine.

The largest of all bony fishes and known from the other two genera of the family chiefly by the high front lobe

Follow—Incl Caps
8 pt. Leaded

134789

24 ems] y^1. No dark opercular blotch; lower jaw longer. . .
. . . . plagiostomus

24 ems] y^2. Opercle with blue blotch; snout not overhanging
mouth. . . . . ophiceps

24 ems] y^3. Opercle with large blue-black blotch; snout over-
haning mouth . . . . . birtwistlei

23 ems] x^2. Fins gray or blackish.

25 ems] z^1. Blackish band along each scale row; head
glossed purple; fins deep black. semiluctuosus

25 ems] z^2. No dark body bands; first dorsal black,
vertical fins dark terminally. . . coitor

fe a^3. Tubular scales 75 to 80 in lateral line. . . . trachycephalus

a^4. Tubular scales 80 in lateral line. . . . . microlepis

of the first dorsal fin. This is made up of the three simple or rudimentary spines closely joined and covered with tough skin. The dorsal spines behind the lobes are all low and gradually shorter to the last, which disappear in the sheath of the back.

y^1. No blue opercular ~~blotch~~ ~~platyostomus~~

~~y^2. Operclo with blue blotch~~ ~~ophiceps~~

x^2. Fins gray or blackish.

z^1. Blackish band along each scale row; head glossed purple; fins deep black semiluctuosus

z^2. ~~Six~~ dark body bands; first dorsal black, vertical fins dark terminally coitor

trachycephalus

microlepis

a^3. Tubular scales 75 to 80 in lateral line

a^4. Tubular scales 90 in lateral line

134789
656

Mr. Ernest Hemingway has written in a popular article "Out in the Stream" some very interesting suggestions'

'Esquire, August 1934.

"Are not the white marlin, the striped marlin and the black marlin all sexual and age variations of the same fish?

For me, with what data I have been able to get so far, they are all one fish. *** No fish I believe that the white marlin, the common marlin caught off Miami and Palm Beach, whose top limit in weight is from 125 to 150 lbs., are the young fishes of both sexes. These fish when caught

Follow—Incl Caps
8 pt. Leaded
134789 684

Corvina catalea CUVIER, Hist. Nat. Poiss., vol. 5, 1830, p. 128, (Pondicherry; Malabar). - VALENCIENNES, Voy. Ind. Orient Bélanger, Zool., 1834, p. 360 (Malabar; Pondicherry). - RICHARDSON, Ichth. China Japan, 1846, p. 226 (China Sea; Canton).

Bola chaptis BUCHANAN-HAMILTON, Fishes of Ganges, 1822, pp. 77, 368, pl. 10, fig. 25, (Ganges estuaries).

Corvina chaptis CUVIER, Hist. Nat. Poiss., vol. 5, 1830, p. 130 (on BUCHANAN-HAMILTON). - BLYTH, Journ. Asiat. Soc. Bengal, vol. 29, 1860, p. 141 (Sitang River). - MASON, Burmah Nat. Resources, 1860, p. 695, 1860.

Corvina platycephala CUVIER, Hist. Nat. Poiss., vol. 5, 1830, p. 132, (Java).

Sciaena platycephala (KUHL and VAN HASSELT) CUVIER, Hist. Nat. Poiss., vol. 5, 1830, p. 132 (name in text).

Sciaena maculata (not BLOCH) GRAY, Illustr. Indian Zoology, vol. 2, 1832, pl. 89, fig. 1, (India). - GUNTHER, Cat. Fish. Brit. Mus., vol. 2, 1860, p. 291 (copied). - DAY, Fishes of Malabar, 1865, p. 50. - THURSTON, Pearl Fisher. Gulf of Manaar, 1890, p. 92 (Tuticorin).

Johnius maculatus BLYTH, Journ. Asiat. Soc. Bengal, vol. 29, 1860, p. 141 (Sitang River).

Johnius valenciennii EYDOUX and SOULEYET, Voy. Bonite, Zool., vol. 1, 1841, p. 159, pl. 1, fig. 2, (China Seas near Macao).

Depth $3^1/_4$ to $3^1/_3$; head 3 to $3^1/_5$, width 2 to $2^1/_8$. Snout $3^4/_5$ to 4 in head; eye 5 to 6, $1^1/_5$ to $1^3/_5$ in snout, 1 to $1^1/_8$ in interorbital; maxillary reaches nearly opposite hind eye edge, expansion $1^1/_8$ to $1^1/_5$ in eye, length $2^1/_4$ to $2^1/_2$ in head; 6 pores at chin; row of upper large teeth exposed with closed jaws and inner row of mandibular teeth large; interorbital $4^2/_3$ to $5^1/_4$, broadly convex; preopercle edge denticulate. Gill rakers 6 + 9, lanceolate, short, half of gill filaments.

have either a very faint stripe which shows in the water but disappears when the fish is taken from the sea or no stripe at all. The smallest I have ever seen weighed 23 lbs. At a certain weight, around 70 lbs and over, the male fish begin to have very pronounced and fairly wide stripes which show brightly in the water but fade when the fish die and disappear an hour or so after death. These fish are invariably well rounded, obviously maturing marlin are always males, and are splendid leapers and fighters in the style of the striped marlin. I believe they are

Leaded
All Caps—Incl Caps
134789

Scales 55 to 67 along lateral line to caudal base and 7 more on latter; scales 41 to 43 in lateral line to caudal base and 22 to 32 more over caudal fin; 8 or 9 scales above, 10 or 11 below, 38 to 40 predorsal. Scales with 12 to 14 basal striae; 42 to 50 basal denticles, with 7 or 8 series of transverse basal elements; circuli very fine.

D. XI, 21, I or 23, third spine $2^{1}/_{5}$ to $2^{2}/_{5}$ in head, first ray $3^{3}/_{5}$; A. II, 7, I, second spine $2^{1}/_{4}$ to $3^{1}/_{10}$, first ray 2 to $2^{1}/_{2}$; caudal $1^{2}/_{5}$ to $1^{1}/_{2}$, obtuse behind; least depth of caudal peduncle $3^{1}/_{4}$ to $3^{7}/_{8}$; pectoral $1^{3}/_{5}$ to $1^{7}/_{8}$; ventral $1^{3}/_{4}$ to $1^{7}/_{8}$.

Soiled drab gray generally. Four slightly deeper broad bands on back, within each 2 or 3 series of deep dusky blotches size of pupil. Iris yellowish. Dorsals pale, with 5 or 6 blackish blotches. Caudal similar, only blotches as 3 or 4 transverse irregular rows. Ventral neutral dusky. Paired fins same.

India, Ceylon, Burma, Malayan Peninsula, East Indies, Philippines, China. According to Day it reaches 1525 mm, and enters tidal waters. My examples are much more coarsely spotted than in Bleeker's figure of Pseudosciaena diacanthus.

8 examples, A.N.S.P. Bombay. Bombay Natural History Society. Length 190 to 280 mm.

1 example, A.N.S.P. Bombay. Prof. F. Hallberg. Length 308 mm.

Johnius aneus Bloch

Johnius aneus BLOCH, Naturg. Ausländ. Fische, vol. 7, 1793, p. 135, pl. 257, fig. 1 (Malabar). SCHNEIDER, Syst. Ichth. Bloch, 1801, p. 74 (Tranquebar)

Johnius aeneus FOWLER, Journ. Bombay Nat. Hist. Soc., vol. 30, No. 4. Nov. 1926, p. 777 (Bombay); Proc. Acad. Nat. Sci. Philadelphia, 1927, p. 285 (Phillipines). (Error.)

the adolescent males of the marlins.

The striped marlin is characterized by his small head, heavily rounded body, rapier-like spear, and by the broad lavender stripes that, starting immediately behind the gills, encircle his body at irregular intervals all the way back to his tail. These stripes do not fade much after the fish is dead and will come up brightly hours after the fish has been caught if water is thrown over them.

All varieties of marlin breed off the Cuban coast and as the roe brings from 40 cents to a dollar and a quarter a pound in the Havana market all fish

8 pt. Leaded
Follow—Incl Caps
134789 686

Labrus aneus LACEPEDE, Hist. Nat. Poiss., vol. 3, 1802, pp. 447, 517 (on BLOCH).

Corvina anei CUVIER, Hist. Nat. Poiss., vol. 5, 1830, p. 131 (on BLOCH).

Otolithus aneus DAY, Proc. Zool. Soc. London, 1867, p. 939 (Madras); 1870, p. 684 (Andamans).

Sciaena aneus DAY, Fishes of India, pt. 2, 1876, p. 189, pl. 45, fig. 5 (Batavia, Bombay, Andamans, Madras); Fauna Brit. India, vol. 2, 1889, p. 119. - LLOYD, Rec. Indian Mus., vol. 1, 1907, p. 226 (Akyab). - SEALE, Philippine Journ. Sci., vol. 9, No. 1, 1914, p. 69 (Hong Kong). - PEARSON, Ceylon Administr. Rep., 1915-1918, pp. F10-F14. - MALPAS, Ceylon Administr. Rep., 1921, p. [illegible].

Pseudosciaena aneus BLEEKER, Atlas Ichth. Ind. Néerland., vol. 9, 1877, pl. (2)385, fig. 2,

Pseudosciaena anea JORDAN and SEALE, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 25 (Cavite). - JORDAN and RICHARDSON, Bull. Bur. Fisher., vol. 27, 1907(1908), p. 261 (Manila). - SEALE, Philippine Journ. Sci., vol. 5, No. 4, Oct. 1910, p. 280 (Sandakan, Borneo).

Argyrosomus aneus FOWLER, Copeia, No. 58, June 18, 1918, p. 64 (Philippines).

Otolithus macrophthalmus BLEEKER, Nat. Tijds. Nederland. Indië, vol. 1, 1850, p. 99. (Batavia, Bantam, Samarang, Pasuruan.

Sciaena macrophthalmus GÜNTHER, Cat. Fish. Brit. Mus., vol. 2, 1860, p. 291 (compiled). - KÁROLI, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 159 (Palaboen).

Corvina macrophthalmus BLEEKER, Verh. Meded. Akad. Wet. Amsterdam, ser. 2, vol. 2, 1868, p. 292 (Bintang).

are carefully opened for roe. Market fishermen say that all the striped marlin are males. On the other hand they claim all the black marlin are females.

But what is the intermediate stage in the development of the female of the white marlin from the handsome, gleaming, well proportioned though rather large headed fish that it is as we know it at a hundred pounds, before it becomes the huge, ugly headed, thick billed, bulky, dark purple, coarse fleshed, comparatively ugly fish that has been called the black marlin?

I believe that its mature life is passed at what we call the silver marlin. This is a

Leaded
Follow—Ink Caps

134789 687

Pseudosciaena macrophthalmus BLEEKER, Verh. Kon. Akad. Wet. Amsterdam, vol. 14, ser. 3, 1874, p. 21 (Singapore, Bintang, Banka, Java, Celebes).

Corvina sina (not CUVIER) SCHLEGEL, Fauna Japonica, Poiss., pts. 2-4, 1853, p. 58, pl. 24, fig. 2.

? Johnius resplendens HOMBRON and JACQUINOT, Voy. Astrolabe, Zool., vol. 3, 1853, p. 45, pl. 5, fig. 1. (No locality.

Otolithus leuciscus GÜNTHER, Ann. Mag. Nat. Hist., ser. 4, vol. 10, 1872, p. 398, (Manila Bay, Philippines). - MEYER, Anal. Soc. Espan. Hist. Nat., Madrid, vol. 14, 1885, p. 23 (Manila Bay). - ELERA, Cat. Fauna Filip., vol. 1, 1895, p. 503 (Luzon, Manila Bay).

Corvina belangerii (not VALENCIENNES) EVERMANN and SEALE, Bull. Bur. Fisher., vol. 26, 1906(1907), p. 87 (San Fabian).

Argyrosomus goldmani (not BLEEKER) FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1918, p. 43 (Philippines; one specimen); Copeia, No. 56, June 18, 1918, p. 64 (same material).

Depth 3 to $3^1/_3$; head $2^7/_8$ to $3^1/_{10}$, width $1^7/_8$ to 2. Snout $3^1/_3$ to $3^1/_2$ in head; eye $3^7/_8$ to $3^2/_5$, $1^1/_4$ to $1^1/_2$ in snout, $1^1/_3$ to $1^1/_2$ in interorbital; maxillary reaches $^1/_2$ to $^3/_5$ in eye, expansion $1^1/_8$ to $1^3/_4$ in eye, length $2^1/_{10}$ to $2^2/_5$ in head; jaws nearly even or lower partly inferior; 5 pores at chin; rather narrow band of villiform teeth in jaws, outer upper and inner lower row enlarged, former slightly canine like anteriorly; interorbital 3 to $3^3/_4$ in head, convex; preopercle edge with 5 or 6 short denticles around angle. Gill rakers 6 + 14, lanceolate, $1^1/_2$ in gill filaments, which $^1/_2$ of eye; 1 or 2 upper and same below of gill rakers rudimentary.

handsome, silvery marlin, unstriped, reaching a thousand pounds or more in weight and a terrible leaper and fighter. The market fishermen claim these fish are always females.

That leaves one type of marlin unaccounted for; the so-called blue marlin. I do not know whether these are a color variation stemming from the white, whether they are both male and female, or whether they are a separate species.

The jew fish becomes a female in the last of its life no matter how it starts and I believe the marlin does the same thing. The real blacks marlin are all old fish. You can see it in the quality of the flesh,

no dipls

Loaded

Follow—Incl Caps

134789 688

Scales 50 in lateral line to caudal base and 23 ? to 30 more out over caudal fin; 55 scales along above lateral line to caudal base; 6 or 7 above, 7 to 10 below, 12 to 14 predorsal to occiput and 13 to 20 more forward to front of snout; 10 principal rows across cheek; soft dorsal, anal and caudal densely scaly. Scales with 9 or 10 basal radiating striae; 44 to 60 short, weak apical denticles, with 12 or 13 transverse series of basal elements; circuli very fine.

D. XI, I, 23, I to 25, I, third spine $1^{9}/_{10}$ to $2^{1}/_{10}$ in head, first ray $3^{1}/_{10}$ to $3^{1}/_{5}$; A. II, 7, I, second spine $3^{1}/_{3}$ to $3^{2}/_{3}$, slender, first ray $2^{1}/_{8}$ to $2^{1}/_{5}$; caudal $1^{1}/_{4}$ to $1^{2}/_{3}$, obtusely angular behind, with infero median rays longest; least depth of caudal peduncle $3^{1}/_{4}$; pectoral $1^{1}/_{3}$ to $1^{2}/_{5}$; ventral $1^{2}/_{5}$ to $1^{3}/_{4}$, first ray ends in short filament.

Largely uniform brown, above with olivaceous tinge, lower surface but slightly paler. Iris dull gray-brown. Spinous dorsal with membranes dusky marginally. Axil and pectoral origin pale like rest of fin. Dorsals and caudal with membranes dark brown, fins otherwise pale and lower more or less whitish.

India, Andamans, East Indies, Philippines, China.

14021. Aparri, Luzon. November 19, 1908. Length, 68 mm.

8852. Catbalogan, Samar. April 15, 1908. Length, 128 mm.

5965, 5973, 5974, 5975. Cavite market. December 1, 1908. Length, 74 to 114mm

6000 [730]. Cavite market. February 21, 1908. Length, 218 mm.

22539. Dagupan, Luzon. March 18, 1908. Length, 105 to 108 mm. 2 examples.

4198. [D. 5361]. Corregidor Light, S. 89° W., 7.2 miles (N. Lat. 14° 24' 15", Long. 120° 41' 30"). February 9, 1909. Length, 164 mm.

6545. Line fisherman off Daet. June 15, 1909. Length, 168 mm.

18444, 18445, 18446, 18447. Manila market. May 4, 1908. Length, 144 to 163mm

the coarseness of the bill, and above all in fighting them, in the way they live. Certainly they grow to a ton in weight. But to me they are all old fish; all represent the last stages of the marlin, and they are all females."

As the species appear to have been greatly and unnecessarily multiplied I have provisionally accepted but two, one of the Atlantic and the other Indo-Pacific.

Follow—Incl Caps
8 pt. Leaded

134789 689

9266. Manila market. July 10, 1908. Length 194 mm.

1 example. Manila market. December 12-13, 1907. Length 124 mm.

5025, 5026. Tacloban market. July 25, 1909. Length 175 to 193 mm.

5078. Sandakan, Borneo. March 1, 1908. Length 190 mm.

11834. Sandakan. March 2, 1908. Length 160 mm.

11461, 11462. Kowloon market. September 8, 1908. Length 123 to 128 mm.

A1024. Buka Island, Celebes. November 20, 1909. Length 153 mm.

32719 U.S.N.M. Indian Archipelago. Royal Museum Leiden. Length 170 mm.

56100 U.S.N.M. San Fabian, Philippines. Bureau of Fisheries (3709). Length 190 mm. As Johnius belengeri.

72687 U.S.N.M. Java. Bryant and Palmer. Length 155 ? mm.

72688 U.S.N.M. Java. Bryant and Palmer. Length 68 mm.

1 example, A.N.S.P. Bombay, India. Bombay Natural History Society. Length 182 mm.

47595 A.N.S.P. Philippines. Commercial Museum of Philadelphia.

47650 A.N.S.P. Philippines. Commercial Museum of Philadelphia. Length 178 mm. As Argyrosomus goldmani.

Johnius coibor (Buchanan-Hamilton)

Bola coibor BUCHANAN-HAMILTON, Fishes of Ganges, 1822, pp. 78, 368, (Larger Ganges estuaries).

Corvina albida CUVIER, Hist. Nat. Poiss., vol. 5, 1830, p. 93, (Pondichery, Mahe, Malabar). - VALENCIENNES, Voy. Ind. Orient. Bélanger, Zool., 1834, p. 355 (Mahe, Coromandel, Pondicherry). - GÜNTHER, Cat. Fish. Brit.Mus., vol. 2, 1860, p. 304 (China). - DAY, Fishes of Malabar, 1865, p. 54. - CASTELNAU, Proc. Linn. Soc. New South Wales, vol.3 1878, p. 47 (Northern Australia). - MACLEAY, Proc. Linn. Soc. New South Wales, vol. 5, 1881, p. 521 (Norman River).

Makaira albida (Poey)

Tetrapturus albidus Poey, Mem. Hist. Nat. Cuba, vol. 2, p. 237, pl. 15, fig. 1, pl. 16, figs. 2 – 13, pl. 17, figs. 1, 5 – 11, 26, 1858 (type locality, Havana); Repert. Fis. Nat. Cuba, vol. 2, p. 380, 1868. — Goode, Rep. U. S. Fish Comm., pt. 8, p. 308 (reference), 1880 (1883), pl. 4 (Massachusetts), pl. 5 (from Poey).

Makaira albida Jordan and Evermann, Occas. Pap. Cal. Acad. Sci., vol. 12, p. 66, Sep. 30, 1926 (compiled).

? Xiphias ensis Lacépède, Hist. Nat. Poiss., vol. 2, (1797) p. 296, (type locality, La Rochelle, France) (spear only).

? Makaira ensis Jordan and Evermann, Occas. Pap. California Acad. Sci., vol. 12, September 30, 1922, p. 57, fig. 1, (photograph of type) (note).

? Makaira nigricans Lacépède, Hist. Nat. Poiss., vol. ~~7~~, (1803) p. 688, pl. 13, fig. 3 (type locality, La Rochelle), — Goode, Rep. U. S. Fish Comm., pt. 8, p. 310, 1880 (1883) (note). — Jordan and Evermann, Occas. Pap. California Acad. Sci., vol. 12, September 30, 1926, p. 67, (type).

Istiophorus nigricans Jordan and Evermann, Bull. U. S. Nat. Mus., No. 47, pt. 1, (1896) p. 891, (compiled).

Diapterus filamentosus Bleeker, Verslagen Kon. Akad. Wetensch. Amsterdam, series 2, vol. 2, 1868, p. 299 (Waigiu); Nederland. Tijdschr. Dierk., vol. 4, 1874, p. 117 (China); Atlas Ichth. Ind. Néerland., vol. 8, 1876-77, p. 124, pl. (7) 362, fig. 3 (Sumatra, Pinang, Singapore, Banka, Java, Madura, Bawean, Bali, Celebes, Sangi, Halmaheira, Ternate, Obi major, Sumbawa, Amboina, Timor, Waigiu, Philippines, New Guinea).

Gerres punctatus Cuvier, Hist. Nat. Poiss., vol. 6, 1830, p. 480. Pondicherry. 1/m Richardson, Ichth. China Japan, 1846, p. 240 (China Seas). 1/m Bleeker, Natuur. Genees. Arch. Nederl. Indie (Topogr. Batavia), vol. 2, 1849, p. 521 (Batavia); Verhandel. Batav. Genootsch. (Malay.) Ichth. Bengal, vol. 25, 1853, p. 38. 1/m Günther, Cat. Fishes Brit. Mus., vol. 1, 1859, p. 345 (China; Philippines); vol. 4, 1864, p. 260 (no locality). 1/m Kner, Reise Novara, Fische, 1865, p. 57 (Java). 1/m Day, Fishes of Malabar, 1865, p. 159. 1/m Schmely.

? Xiphias makaira Shaw, General Zool., vol. 4, pt. , (1805) p. 104, (on Lacépède 1803).

? Histiophorus gracilirostris Valenciennes Cuvier, Hist. Nat. Poiss., vol. 8, 1831, p. 308 (type locality, Seychelles) (spear only). — Lütken, Vid. Med. Naturh. Foren. Kjöbenhavn, (1875) p. , (reference). — Goode, Rep. U. S. Fish Comm., pt. 8, 1880 (1883), p. 310, (compiled).

Makaira gracilirostris Jordan and Evermann, Occas. Pap. California Acad. Sci., vol. 12, September 30, 1926, p. 58, (compiled).

? Makaira velifera Cuvier, Mém. Hist. Nat. Paris, (1832) p. 43, pl. 2, (on Lacépède 1803).

Xiphias velifer Günther, Cat. Fish. Brit. Mus., vol. 2, p. 512, 1860 (compiled).

41 (Madagascar); 1925, p. 244 (Melagoa Bay); Journ. Bombay Nat. Hist. Soc., vol. 30, No. 4, November 1926, p. 8. (Bombay).

1/m Fowler and Bean, Proc. U. S. Nat. Mus., vol. 71, 1927, p. 7 (Benkoelen, Sumatra).

1/m Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1927, p. 20 (San Fernando, Santa Maria, Bangued, Vigan, Urdaneta, Orion, Philippines); Journ. Bombay Nat. Hist. Soc., vol. 33, No. 1, 1928, p. 115 (Bombay); Mem. Bishop Mus., vol. 10, 1928, p. 426 (New Guinea); Proc. Acad. Nat. Sci. Philadelphia, 1929 (1930), p. 610 (Hong Kong), p. 647 (Padang). 1/m

Tirant, Service Géogr. Péch. Indo Chine, 1929, Note 6, p. 11) 13 (Hué River).

Geores filamentosum Mason, Burmah Nat. Resources, 1860, p. 694. (nomen nud.)

Catochaenum filamentosum Cantor, Journ. Asiatic Soc. Bengal, vol. 18, pt. 2, 1849, p. 1038 (Pinang).

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Machaera niger Swainson, Nat. Hist. Animals, vol. 2, p. 240, 1839 (or Lacépède).

Tetrapturus amplus Poey, Mem. Hist. Nat. Cuba, vol. 2, (1868) p. 243, pl. 15, fig. 2, pls. 16, figs. 12-25 (type locality, Havana; Jordan Rep. Fish. Nat. Cuba, vol. 2, p. 380, 1868. and Evermann, Bull. U. S. Nat. Mus., No. 47, pt. 1, (1896) p. 892, (compiled — Goode, Rep. U. S. Fish Comm., pt. 8, p. 308, 1880 (1883) (note).

Makaira ampla Jordan and Evermann, Occas. Pap. California Acad. Sci., vol. 12, September 30, 1926, (p. 69, (compiled).

Tetrapturus lessonae Canestrini, Archiv. Zool. Anat. Fisiol., vol. 1, (1862) p. 257, (type locality, Off Liguria). pl. 7 — Goode, Rep. U. S. Fish Comm., pt. 8, p. 308, 1880 (1883) (reference).

Inakaira lessonae Jordan and Evermann, Occas. Pap. California Acad. Sci., vol. 12, September 30, 1926, p. 56, (compiled).

Tetrapturus imperator (not Schneider) Jordan and Evermann, Bull. U. S. Nat. Mus., No. 47, pt. 1, (1896) p. 892, (part; synonymy confused with Tetrapturus indica)

2. The following seem to pertain to the nominal Gerres macracanthus Bleeker, more slender, with dark vertical lines, not spots as in the preceding group.

20 examples. Beach near anchorage off Olaet, Luzon. June 15, 1909. Length 61 to 79 mm. Of these 16 with second dorsal spine filamentous.

4 examples. Buena Vista, Guimaras Island, Iloilo Strait. January 14, 1909.

1 examples. Catbalogan, Samar. April 15, 1908. Length 117 mm.

22540. Dagupan, Luzon. March 18, 1908. Length 80 mm.

3 examples. Davao, Mindanao. May 16, 1908. Length 38 to 66 mm.

1 example. Estero, Tablayan Bay, Mindoro. December 13, 1908. Length 62 mm.

15 examples. Malaga River, Hinunangan Bay, Leyte. July 26, 1907. Length 53 to 107 mm. Five largest with prolonged second dorsal filament.

Depth 5 $\frac{1}{4}$ to 7; head 2 $\frac{2}{5}$ to 2 $\frac{2}{3}$. Snout 1 $\frac{2}{5}$ to 1 $\frac{1}{2}$ in head; eye 3 $\frac{1}{4}$ to 4 in postocular; mandible 1 $\frac{1}{2}$ to 1 $\frac{3}{5}$ in rest of head; maxillary extends $\frac{1}{2}$ to $\frac{3}{4}$ eye diameter beyond eye.

Lateral line distinct, axial. Basal caudal keels slightly approximate behind.

D. XXXVI to XXXIX, first fin origin about last third or fourth of postocular space, height of front lobe 2 $\frac{2}{3}$ to 2 $\frac{4}{5}$ in total head length, length of second dorsal 3 $\frac{3}{4}$ to 5 $\frac{1}{4}$; A. with origin of first fin little nearer gill opening than caudal base, height of lobe 3 to 3 $\frac{1}{3}$, length of second fin 3 $\frac{1}{3}$ to 6; pectoral 2 to 2 $\frac{1}{4}$, reaches 1 $\frac{2}{5}$ to 1 $\frac{7}{8}$ to first anal; ventral 2 $\frac{1}{2}$ to 3 in head.

dark gray above, paler on sides and below, with or without 14 to 16 transverse light grayish to whitish lines or bars, usually only distinct when freshly caught. Fins more or less dark gray blue, marked with round blueish spots on the first dorsal. With age body largely gray black.

Atlantic. Here described from New Jersey, Florida and Cuban specimens. Reaches 15 feet or more in length and upwards of 1000 pounds or more in weight.

Inhauma indica (Cuvier ~~Valenciennes~~)

~~Tetrapturus~~ indicus Cuvier ~~Valenciennes~~, ~~Hist. Nat. Poiss.~~, vol. 8, (1831) p. 286, (type locality, Sumatra). — Goode, Rep. U. S. Fish Comm., pt. 8, 1880 (1883), p. 307 (~~copied~~ note). — Waite, Mem. Nat. Club New South Wales, p. 42, 1904. — Stead, Fishes of Australia, p. 170, fig. 66, 1906 (Manly); Edible Fishes of New South Wales, p. 100 pl. 67, 1908 (Port Jackson). — McCulloch, Austral. Zool., vol. 2, p. 80, 194.

Inhauma indica Jordan and Evermann, Descr. Pap. California Acad. Sci., vol. 12, September 30, 1926, p. 67, (compiled). — Deraniyagala, Ceylon Journ. Sci., vol. 18, pt. 1, p. 53, pl. 3, Dec. 22, 1933 (Ceylon).

Tetrapturus herschelii Gray, Ann. Mag. Nat. Hist., vol. 1, 1838, p. 313, pl. 10 (type locality, Table Bay, Cape of Good Hope). — Lütken, Vid. Dansk. Selsk. Kjöbenhavn, vol. 12, pt. 6, 1880, p. 441 ( ). — (Goode, Rep. U. S. Fish Comm., pt. 8, 1880 (1883), p. 307 (Mauritius). — Mc Culloch, Austral. Mus. Mem., No. 5, pt. 2, p. 266, September 10, 1929 (reference)). Histiophorus herschelii (Günther, Cat. Fish. Brit. Mus., vol. 2, 1860, p. 513 (type).

Makaira herschelii Jordan and Evermann, Occas. Pap. California Acad. Sci., vol. 12, September 30, 1926, p. 69 (Russell, Bay of Islands, New Zealand).

52009 U.S.N.M. Negros Island, Philippines.
Dr. Bashford Dean. Length 88 mm.

56207 U.S.N.M. Bulan, Philippines.
Bureau of Fisheries (3220). Length 136 mm.

72214 U.S.N.M. Iloilo, Philippines.
R.C. Mac Gregor. Length 79 mm.

72261 U.S.N.M. Cagayan, Philippines.
R.C. Mac Gregor. Length 128 mm.

75924 U.S.N.M. Japan? P.L. Jouy.
Length 167 & 190 mm. 2 examples.

87098 U.S.N.M. Hainan, China.
C. Ping. Length 147 mm.

Tetrapturus audax Philippi, Anw. Univ. Chile, vol. 71, (1887) p. 35, pl. 8, figs. 2-3, (type locality, Iquique, Chile).

Makaira audax Jordan and Evermann, Occas. Pap. California Acad. Sci., vol. 12, (September 30, 1926) p. 66, (compiled).

Tetrapturus mitsukurii Jordan and Snyder, Journ. College Sci. Tokyo, vol. 15, pt. 2, (May 20, 1901) p. 303, pl. 16, fig. 5, (type locality, Misaki, Sagami). — Jordan and Jordan, Mem. Carnegie Mus., vol. 10, no. 1, (December 1927) p. 30, (Honolulu). — Fowler, Occas. Pap. Bishop Mus., vol. 8, no. 7, 49 p. 378, 1923, (Honolulu); Mem. Bishop Mus., vol. 10, (1928) p. 136, (Honolulu); vol. 11, no. 5, p. 325, 1931 (Honolulu). — Anonymous, Illustr. Jap. & Chin. Plants, vol. 1, no. 26, figs. 1, 1931.

1011—1012

1. The following all pertain to the true filamentosus form.

22649. Basuit River, Luzon. June 15, 1909. Length 143 mm.?

2 examples. Buena Vista, Guimaras Island, Iloilo Strait. January 14, 1909. Length 94 to 112 mm.

5 examples. Davao, Mindanao. May 16, 1908. Length 92 to 138 mm.

4990, 4991. Ragay River, Ragay Gulf, Luzon. In fresh water. March 10, 1909. 25 examples. Length 90 to 142 mm. In some of these specimens the dark vertical bands are complete, in others they are arranged as vertical rows of dark spots.

2 examples. River at Pasacao, Luzon. March 9, 1909. Length 104 to 113 mm.

22341, 22345. Shore above Iloilo River, June 2, 1908. Length 84 to 129 mm.

30571 U.S.N.M. New Guinea. Australian Museum (188). Length 233 mm.

Makaira mitsukurii Jordan and Evermann, Occas. Pap. California Acad., vol. 12, September 30, 1926, p. 61, pl. 18 (compiled).

Tetrapturus mazara Jordan and Snyder, Journ. College Sci. Tokio, vol. 15, pt. 2, May 20, 1901, p. 305 (type locality, Misaki, Sagami). — Fowler, Mem. Bishop Mus., vol. 11, No. 6, p. 400, 1934 (reference).

Makaira mazara Jordan and Evermann, Occas. Pap. California Acad. Sci., vol. 12, September 30, 1926, p. 53, pl. 11, fig. 2 (Honolulu). — Griffin, Trans. New Zealand Inst., vol. 58, p. 141, pl. 13, fig. 5, 1927. — MacCulloch, Austral. Mus. Mem., vol. 5, pt. 2, p. 266, 1929.

Makaira grammatica Jordan and Evermann, Occas. Pap. California Acad. Sci., vol. 12, September 30, 1926, p. 55, pl. 16 (type locality, Honolulu market) (dorsal fin and photograph).

Anonymus similis, S. Bluster. Prof. Aquatic Blanks and Anon., vol. 1, pl. 26, fig. 3, 1931.

ray and hind spines with blackish spot near base. Length 88 mm).

The imperfectly described and deep bodied Gerres cheverti may be another synonym. It differs, however, in that the figure shows 8 scales above the lateral line and 12 below to the anal origin; depth 2 1/5; head 3 1/5. Eye 2 3/4 in head, apparently longer than snout (figure shown with mouth extended). Lateral line 40 (on figure about 45 rows to caudal base). D. IX, 10 (11 rays on figure), second spine half body depth; A. III, 7 (8 rays on figure), second and third spines subequally large though second more robust; on figure pectoral shown long as head. Bright silvery. Dorsal pale, tipped black. Anal and ventral deep yellow. Length 100 mm).

Added to plate 1 [illegible]

Makaira marlina (Jordan) and Hill) Jordan and Evermann, Occas. Pap. California Acad. Sci., vol. 12, September 30, 1926, p. 55, pl. 16 (type locality, off Cape San Lucas (photograph).

Makaira holei Jordan and Evermann, Occas. Pap. California Acad. Sci., vol. 12, September 30, 1926, p. 63, pl. 19, fig. 1 (type locality, Presumably off Catalina, California, or off Lower California).

Makaira zealandica Jordan and Evermann, Occas. Pap. California Acad. Sci., vol. 12, September 30, 1926, p. 65, pl. 19, fig. 2 (type locality, Bay of Islands, New Zealand) (photograph).

Indo China, China, Riu Kiu, Queensland, Melanesia). Several nominal species are apparently (synonymous) with the present one. Serres philippinus (Günther seems to be known chiefly from its original description. I think this suggests Serres filamentosus, especially as its second dorsal spine is described as elongate or 2/3 the body depth. This character is shared by no other Indo-Pacific species. Its characters in brief are:

Depth 2 2/5; head 2 1/4. Eye 3 in head, more than snout, equals interorbital. Scales 48 in lateral line; 6 above, 12 below; dorsal scaly sheath very high. D. IX, 10; A. III, 7, second spine much stronger but scarcely shorter than third, not quite half of head. Pectoral reaches second anal spine. Silvery. Each dorsal

Istiompax australis Whitley, Australian Zoologist, vol. 6, p. 321, 1931 (type locality, Off Wollongong, New South Wales); Rec. Australian Mus., vol. 18, no. 4, p. 148, June 29, 1931 (New South Wales).

Makaira australis Fowler, Mem. Bishop Mus., vol. 11, no. 6, p. 400, 1934 (compiled).

Depth 5 1/2 to 6 1/2; head 2 1/2 to 2 4/5. Snout 1/3 to 1/2 in head; eye 5 1/5 to 5 1/2 in postocular; mandible 1/3 to 1/2 in rest of head; maxillary extends 3/5 to 1 eye diameter behind eye.

Lateral line usually obsolete, axial.

first fin

D. XXXV to XL, 6 or 7, inserted in last fifth to 2/5 of postocular space, lobe height 2 1/4 to 2 1/2 length of second fin 3 1/2 to 4 in head; A. 11 or 12 — 6, lobe height of first fin 4 to 4 1/6, length of second fin 3 1/2 to 4; caudal widely forked, upper lobe 1/3 to 1/4/5, least depth of caudal peduncle 8 1/4 to 9; pectoral 2 to 2 1/5, reaches 1/2 to 2/3 to first anal; ventral 2 to 2 3/5 in head, shorter with age.

Back dark-gray blue to brownish black. Back and sides with 10 to 15 or more transverse gray white bands or narrow bars, sometimes absent or may fade soon after death. Fins all more or less grayish, dorsals, caudal and ventrals gray black and both dorsals usually with dark blue spots. Iris silvery.

South Africa, Mauritius, East Indies, Japan, New South Wales, New Zealand, Hawaii, California, Lower California, Chili. The above description is from mounted specimens, chiefly in private collections from Honolulu and California, the largest about 12 feet long.

The only Philippine specimen coming to my notice is from a photograph kindly sent to me by Prof. E. H. Taylor in 1933. Though without exact locality it was known to have been obtained near the southern point of Luzon. It was skinned out and mounted, its total length 50 cm. Unfortunately the specimen was destroyed some years ago in the 'Carnival fire' in Manila, where it was exhibited. The photograph shows it agrees in most every detail with the present species.

Another photograph was sent of specimen, evidently mounted, obtained at Mombasa, March 10, 1934 and said to weigh 125 pounds, by Mr. Hugh Copley.

It is evidently a much younger fish, with the ventrals much longer than the pectorals, the maxillary only reaching the front eye edge, the pectoral also slightly shorter than the first dorsal lobe and the snout $\frac{2}{3}$ length of head.